KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VS-41HC
4x1 HDMI Switcher

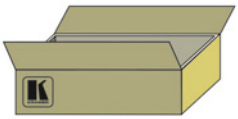
P/N: 2900-000423 Rev 4

VS-41HC Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- **VS-41HC** 4x1 HDMI Switcher
- 1 Power supply (5V DC)
- 1 Quick Start sheet
- 4 Rubber feet
- Kramer RC-IR3 Infrared Remote Control Transmitter with batteries and user manual



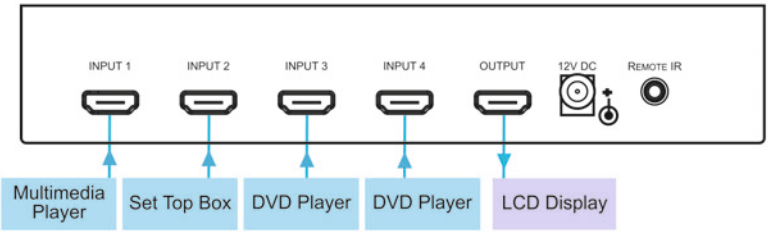
Save the original box and packaging materials in case you need to return your **VS-41HC** for service.

Step 2: Install the VS-41HC

Attach the rubber feet and place on a table or mount the **VS-41HC** in a rack (using an optional RK-1 rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VS-41HC**.



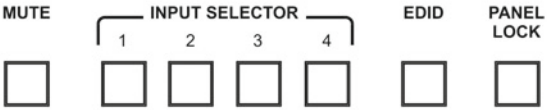
Always use Kramer high-performance cables for connecting AV equipment to the **VS-41HC.**

Step 4: Connect the power

Connect the 12V DC power adapter to the **VS-41HC** and plug the adapter into the mains electricity.

Step 5: Operate the VS-41HC

Press the front panel buttons to select the input, capture an EDID, disconnect the video output (mute) and lock the front panel.



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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **VS-41HC** *4x1 HDMI Switcher*, which is ideal for the following typical applications:

- Home cinema
- Conference room presentations
- Advertising

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

Go to http://www.kramerelectronics.com to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VS-41HC** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

3 Overview

The desktop-sized **VS-41HC** is a high performance switcher for HDMI signals. It switches any one of the four inputs to a single HDMI output.

In particular, the **VS-41HC** features:

- A maximum data rate of 6.75Gbps (2.25Gbps per graphic channel)
- HDCP compliance
- HDTV compatibility
- HDMI support for Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS−HD, CEC
- 3D Pass-Through
- I-EDIDPro™ Kramer Intelligent EDID Processing™, an intelligent EDID handling and processing algorithm that ensures Plug and Play operation for HDMI systems
- Front panel lockout
- Video mute that disconnects the output
- Front panel and IR (included) controls

3.1 Defining the VS-41HC 4x1 HDMI Switcher

This section defines the **VS-41HC**.

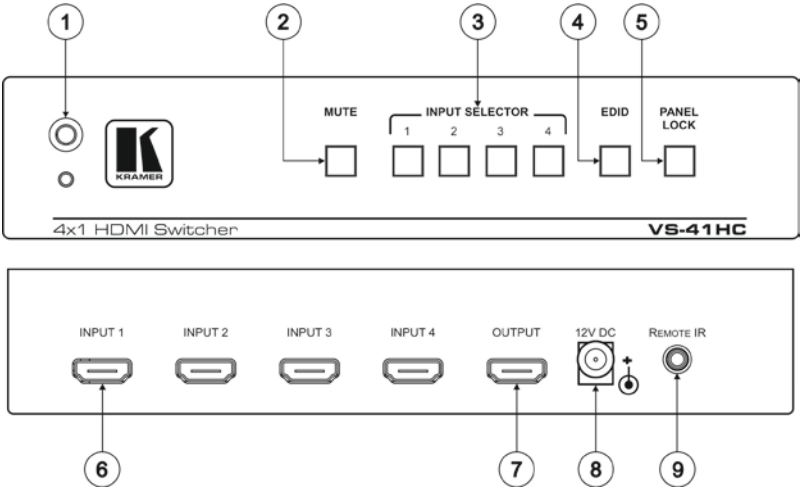

Figure 1: VS-41HC 4x1 HDMI Switcher

#	Feature	Function
1	IR Receiver	The red LED lights when receiving signals from the Infrared remote control transmitter
2	*MUTE* Button	Press to toggle disconnecting the output
3	*INPUT SELECTOR* Buttons	Press an INPUT button to select an input (from 1 to 4)
4	*EDID* Button	Press to acquire the EDID (see section 5.1)
5	*PANEL LOCK* Button	Press to toggle disengaging the front panel buttons
6	*INPUT* HDMI Connectors	Connect to the HDMI sources (from 1 to 4)
7	*OUTPUT* HDMI Connector	Connect to the HDMI acceptor
8	*12V DC*	+12V DC connector for powering the unit
9	*REMOTE IR* 3.5mm Connector	Connects to an optional external IR receiver unit for controlling the machine via an IR remote controller instead of using the front panel IR receiver (only if the internal IR connection cable has been installed)

3.2 Using the IR Transmitter

You can use the **RC-IR3** IR transmitter to control the machine via the built-in IR receiver on the front panel or, instead, via an optional external IR receiver (Model: C-A35M/IRR-50). The external IR receiver can be located up to 15 meters away from the machine. This distance can be extended to up to 60 meters when used with three extension cables (Model: C-A35M/A35F-50).

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable (P/N: 505-70434010-S) with the 3.5mm connector that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm connector.

4 Connecting the VS-41HC

Always switch off the power to each device before connecting it to your **VS-41HC**. After connecting your **VS-41HC**, connect its power and then switch on the power to each device.

To connect the **VS-41HC** as illustrated in the example in Figure 2:

1. If required, acquire the EDID (see Section 5.1).
2. Connect the OUTPUT HDMI connector to an HDMI acceptor (for example, an LCD display).
3. Connect the HDMI sources as follows:
   You do not have to connect all the HDMI sources.
   - A multimedia player to INPUT 1
   - A set top box to INPUT 2
   - A DVD player to INPUT 3
   - A DVD player to INPUT 4
4. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 2).

Press an INPUT SELECTOR button (from 1 to 4) to choose which HDMI input to route to the output.

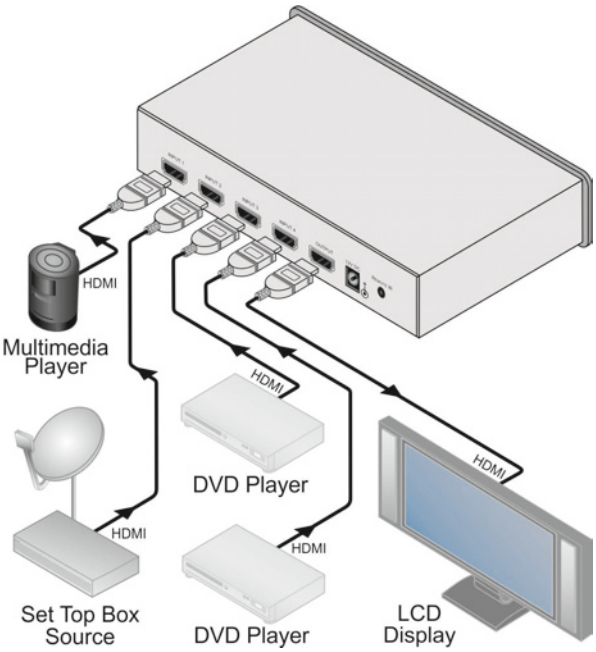

Figure 2: Connecting the VS-41HC 4x1 HDMI Switcher

4.1 Using the PC and DVD Modes

The **VS-41HC** has two operation modes that can be set individually for each input: the PC mode (default) and the DVD mode:

- Use the PC mode when connecting one or more computers to the inputs using a DVI-to-HDMI converter cable

  For example, the Kramer HDMI-DVI gold-plated cable in various lengths (3", 6", 10" and 15").

- Use the DVD mode when connecting one or more DVDs to the inputs

In the PC mode, an input always has access to the EDID (default or acquired) to prevent the computer from resetting if the output is not connected.

In the DVD mode, an input only has access to the EDID when it is switched to the connected output.

The PC mode and the DVD mode can be applied to a single unit or to several inputs. For example, if you want to connect computers to INPUTS 1 and 2, and DVD machines to INPUTS 3 and 4, set INPUTS 1 and 2 to the PC mode and INPUTS 3 and 4 to the DVD mode.

To set the inputs to either the PC or DVD mode, do the following:

1. Turn off the **VS-41HC** power.

2. Press the PANEL LOCK button while turning the power on again.

3. Keep pressing and holding the PANEL LOCK button for a few seconds and then release it.
   The LOCK button flashes.
   If an input button illuminates, this indicates that that input is set to the DVD mode.
   If an input button is not illuminated, this indicates that that input is set to the PC mode.

4. Press an input to toggle between the PC mode (input button not illuminated) and the DVD mode (input button illuminated).

5. To exit this mode, press the PANEL LOCK button.

6. Connect a computer to the input that is set to the PC mode and a DVD to the input that is set to the DVD mode.

The following table summarizes the differences between the PC mode and the DVD mode:

PC Mode	DVD Mode
The input is connected to a computer	The input is connected to a multimedia application, such as a DVD, a set top box and so on
The EDID is available at all times (to prevent computer reset)	The EDID is available only when the input and an output are connected
The input EDID source is the default EDID or an acquired EDID (see Section 5.1)	The input EDID source is acquired directly from the connected output

5 Setting the EDID

You can acquire or change the EDID (see Section 5.1) or reset the machine to the default EDID (see Section 5.2).

5.1 Acquiring / Changing the EDID

You can work with the default EDID or acquire or change an EDID via the connected output. Use the EDID button to acquire the output EDID information.

To acquire or change the EDID of a new output display:

1. Connect the power supply.
2. Connect the new output display device.
3. Press the EDID button.
   The INPUT buttons blink in sequence until the EDID is acquired.

5.2 Resetting the Default EDID

To reset the default EDID, disconnect the output and repeat the steps in Section 5.1.

6 Technical Specifications

INPUTS:	4 HDMI connectors
OUTPUT:	1 HDMI connector
BANDWIDTH:	6.75Gbps (2.25Gbps per graphic channel)
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
RESOLUTION:	1080p @30bpp
POWER CONSUMPTION:	12V DC, 320mA;
CONTROLS:	Front panel buttons, Infrared remote control transmitter
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	22cm x 18cm x 4.5cm (8.6” x 7” x 1.8”) W, D, H. ½-19 inch 1U
WEIGHT:	1.3kg (2.9lbs) approx.
ACCESSORIES:	12V/1.25A power adapter, power cord, IR remote control
OPTIONS:	RK-1 19” rack adapter, external remote IR receiver cable
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

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IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

P/N: 2900-000423 Rev: 4